

What is claimed is:

1. An ozone generator for generating ozone by applying a specified process to an oxygen gas by discharge, comprising:

a first raw material gas supply unit for supplying the oxygen gas as a first raw material gas; and

a second raw material gas supply unit for supplying an oxide compound gas as a second raw material gas,

wherein by excited light excited and generated by the discharge under existence of the oxygen gas and the oxide compound gas, the oxide compound gas is dissociated, or the oxide compound gas is excited to have an accelerating action of dissociation of the oxygen gas, and the ozone is generated.

2. An ozone generator according to claim 1, wherein the oxide compound gas is nitrogen dioxide, and the nitrogen dioxide of from 0.0002 ppm to several tens ppm is contained in the oxygen gas.

3. An ozone generator for generating ozone by applying a specified process to an oxygen gas by discharge, comprising:

a first raw material gas supply unit for supplying the oxygen gas as a first raw material gas; and

a second raw material gas supply unit for supplying a nitrogen dioxide gas as a second raw material gas,

wherein the ozone is generated through excitation by the discharge under existence of the oxygen gas and the nitrogen dioxide gas.

4. An ozone generator, comprising:

a first electrode;

a second electrode facing the first electrode to form a discharge area;

a first raw material gas supply unit for supplying an oxygen gas as a first raw material gas;

a second raw material gas supply unit for supplying a second raw material gas as an oxide compound gas or capable of generating an oxide compound gas; and

a third raw material gas supply unit for supplying a third raw material gas which is excited by discharge and generates excited light to dissociate the oxide compound gas or to excite the oxide compound gas to accelerate dissociation of the oxygen gas,

wherein an AC voltage is applied between the first electrode and the second electrode from a power supply to inject discharge power to the discharge area, specified quantities of the raw material gases by the first to the third raw material gas supply units are supplied to a space where the discharge is generated between gaps of the discharge area, and an ozone gas is generated.

5. An ozone generator according to claim 4, wherein

by the oxygen gas as the first raw material gas, the second raw material gas, the third raw material gas, and the discharge,

- i) the oxide compound gas exists,
- ii) the excited light is generated by excitation of a gas atom or a gas molecule of the third raw material gas by the discharge,
- iii) an oxygen atom is generated by a chemical reaction of the oxide compound gas and the excited light, or by a photocatalytic reaction of the oxide compound gas, and
- iv) the ozone is generated by a binding action with the oxygen gas as the first raw material gas.

6. An ozone generator according to claim 4, wherein the second raw material gas is one selected from a group consisting of nitrogen dioxide, nitrogen monoxide, nitrogen, carbon dioxide and carbon monoxide, and the second raw material gas of from 0.2 ppb to several hundred ppm is contained in the oxygen gas.

7. An ozone generator according to claim 4, wherein the third raw material gas is one selected from a group consisting of noble gas, nitrogen monoxide, nitrogen dioxide, and carbon dioxide, and the third raw material gas of from several hundred ppm to 50000 ppm is contained in the oxygen gas.

8. An ozone generator according to claim 4, wherein a cylinder in which the second raw material gas is added to the third raw material gas is used, and the second raw material gas and the third raw material gas are added to the first raw material gas.

9. An ozone generator, comprising:

- a first electrode;
- a second electrode facing the first electrode to form a discharge area;
- a first raw material gas supply unit for supplying an oxygen gas as a first raw material gas;
- a second raw material gas supply unit for supplying a second raw material gas as one of nitrogen dioxide, nitrogen monoxide, nitrogen, carbon dioxide and carbon monoxide; and
- a third raw material gas supply unit for supplying a third raw material gas as one of noble gas, nitrogen monoxide, nitrogen dioxide, and carbon dioxide,

wherein an AC voltage is applied between the first electrode and the second electrode from a power supply to inject discharge power to the discharge area, specified quantities of the raw material gases by the first to the third raw material gas supply units are supplied to a space where the discharge is generated between gaps of the discharge area, and an ozone gas is generated.

10. An ozone generator according to claim 9, wherein the second raw material gas is one selected from a group consisting of nitrogen dioxide, nitrogen monoxide, nitrogen, carbon dioxide and carbon monoxide, and the second raw material gas of from 0.2 ppb to several hundred ppm is contained in the oxygen gas.

11. An ozone generator according to claim 9, wherein the third raw material gas is one selected from a group consisting of noble gas, nitrogen monoxide, nitrogen dioxide, and carbon dioxide, and the third raw material gas of from several hundred ppm to 50000 ppm is contained in the oxygen gas.

12. An ozone generator, comprising:

- a first electrode;
- a second electrode facing the first electrode to form a discharge area;
- a first raw material gas supply unit for supplying an oxygen gas as a first raw material gas;
- a photocatalytic material provided on a dielectric in the discharge area or on the electrode and for absorbing light in a specified wavelength range or a material transformed into a photocatalyst by discharge; and
- a third raw material gas supply unit for supplying a third raw material gas which is excited by the discharge

and generates excited light to excite the photocatalytic material to accelerate dissociation of the oxygen gas,

wherein an AC voltage is applied between the first electrode and the second electrode from a power supply to inject discharge power to the discharge area, specified quantities of the raw material gases by the first and the third raw material gas supply units are supplied to a space where the discharge is generated between gaps of the discharge area, and an ozone gas is generated.

13. An ozone generator according to claim 12, wherein the photocatalytic material is one selected from a group consisting of WO_3 material, CrO_2 material, Fe_2O_3 material, TiO_2 material, metal semiconductor material, and ferroelectric material.

14. An ozone generator according to claim 12, wherein the photocatalytic material is constituted by plural different photocatalytic materials.

15. An ozone generator according to claim 12, wherein the third raw material gas is one selected from a group consisting of noble gas, nitrogen monoxide, nitrogen dioxide, and carbon dioxide, and the third raw material gas of from several hundred ppm to 50000 ppm is contained in the oxygen gas.

16. An ozone generator according to claim 12, wherein a cylinder in which the third raw material gas is

added to the first raw material gas is used.

17. An ozone generator, comprising:

a first electrode;

a second electrode facing the first electrode to form a discharge area;

a first raw material gas supply unit for supplying an oxygen gas as a first raw material gas;

a photocatalytic material provided on a dielectric in the discharge area or on the electrode and for absorbing light in a specified wavelength range, or a material transformed into a photocatalyst by discharge;

a second raw material gas supply unit for supplying a second raw material gas as an oxide compound gas or capable of generating an oxide compound gas by the discharge; and

a third raw material gas supply unit for supplying a third raw material gas which is excited by the discharge and generates excited light to excite the photocatalytic material and the oxide compound gas to generate an oxygen atom,

wherein an AC voltage is applied between the first electrode and the second electrode from a power supply to inject discharge power to the discharge area, specified quantities of the raw material gases by the first to the third raw material gas supply units are supplied to a

space where the discharge is generated between gaps of the discharge area, and an ozone gas is generated.

18. An ozone generator according to claim 17, wherein the photocatalytic material is one selected from a group consisting of WO_3 material, CrO_2 material, Fe_2O_3 material, TiO_2 material, metal semiconductor material, and ferroelectric material.

19. An ozone generator according to claim 17, wherein the photocatalytic material is constituted by plural different photocatalytic materials.

20. An ozone generator according to claim 17, wherein the second raw material gas is one selected from a group consisting of nitrogen dioxide, nitrogen monoxide, nitrogen, carbon dioxide and carbon monoxide, and the second raw material gas of from 0.2 ppb to several hundred ppm is contained in the oxygen gas.

21. An ozone generator according to claim 17, wherein the third raw material gas is one selected from a group consisting of noble gas, nitrogen monoxide, nitrogen dioxide, and carbon dioxide, and the third raw material gas of from several hundred ppm to 50000 ppm is contained in the oxygen gas.

22. An ozone generator according to claim 17, wherein a cylinder in which the second raw material gas is added to the third raw material gas is used, and the

second raw material gas and the third raw material gas are added to the first raw material gas.

23. An ozone generator according to claim 17, wherein a cylinder in which the second raw material gas and the third raw material gas are added to the first raw material gas is used.